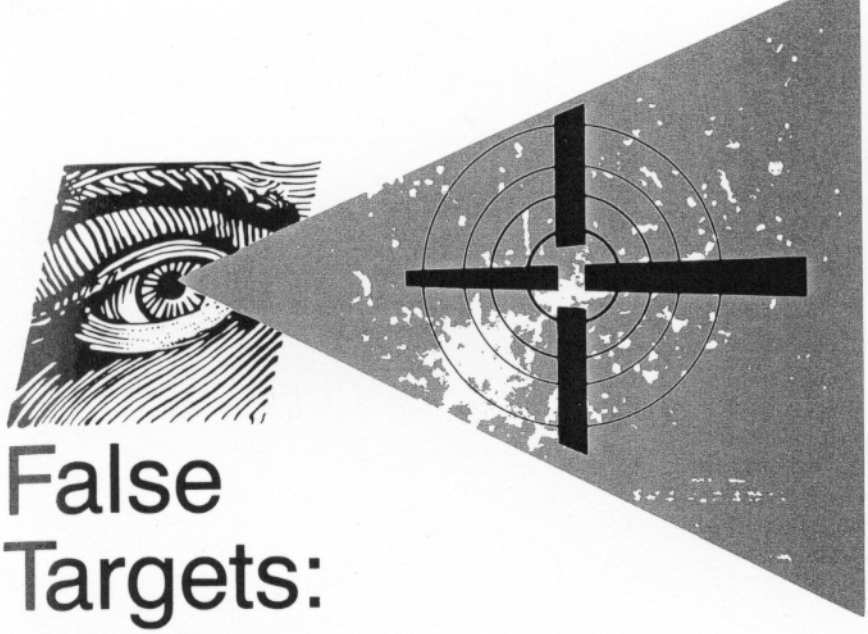

False Targets: Mirages in the Desert

By Captain Michael D. Farris and
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This article presents a phenomenon encountered by our target acquisition (TA) battery immediately following Operation Desert Storm—the acquisition of false targets by Firefinder radars. I hope this article spurs discussions about and solutions for the problem and benefits other Redlegs working in the challenging field of TA.

F/333's Firefinder Radar Section #3 monitors the cease-fire during Operation Desert Storm.

On 8 March, eight days after the unofficial Desert Storm cease-fire, the 3d Armored Division received the mission to conduct a relief in sector of the 1st Cavalry Division. Battery F, 333d Field Artillery (F/333 FA), as part of the 3d Armored Division Artillery (Div Arty), assumed responsibility for TA radar coverage of the new area of operations. The division's sector stretched some 100 kilometers northeast to southwest along the border between Iraq and the newly liberated Kuwait.

The battery's three AN/TPQ-36 and two AN/TPQ-37 Firefinder radars, located with the Div Arty's direct support (DS) battalions, were given positions, search azimuths and instructions to radiate 24 hours a day until the official cease-fire was signed on 12 April 1991. The mission was to end when United Nations Peacekeeping forces were in place.

False Targets

The lessons learned in Southwest Asia were many, but none more important than those resulting from our experiences with false targets. Until we had false targets, we had limited knowledge of them and their negative effect on our TA mission. As one consequence, those who depend on the radar for accurate and reliable target information lost confidence in its abilities.

This subject is one of the least talked about in TA, although an excellent memorandum exists that discusses it thoroughly. The memorandum, dated 18 September 1990, is titled "Firefinder Radar False Targets" and was written by Jerry D. Shelly, former Chief of the Development Coordinating Center in the Target Acquistion Department, Field Artillery School, Fort Sill, Oklahoma. It was his intent to point out a number of problems that negatively impact on the Firefinder's credibility. He uses the experiences of Redlegs who deployed to Panama for Operation Just Cause and the exercise that took place in Lebanon to illustrate his points.

The most pertinent and overriding point made in Shelly's memo is "...there is no formalized method to identify and eliminate false targets." This deficiency in our doctrine became readily apparent as we tried to differentiate between real and false targets acquired in the desert.

Between 8 March and 12 April, the battery's Firefinders detected more than 60 targets. This doesn't seem like an ex-

cessive number until you relate it to our mission and the consequences of reporting these acquisitions to higher headquarters. Each acquisition required painstaking scrutiny as each meant a potential violation of the US-imposed cease-fire and had to be reported through channels to the US State Department.

The method we used to confirm the authenticity of each target was to compare the point of impact of an enemy round fired with the weapons location grid and, if possible, task a ground unit in the vicinity of the impact point to search the area for craters. In every incident, no evidence was found to validate the existence of real enemy incoming artillery or mortar rounds.

The closest thing to an impact indicator was the mark made by illumination flares fired on the other side of the Demarcation Line that had drifted to our side. These accounted for approximately one-third of our target acquisitions. Since there was no visual or audio verification of an actual impact for the other targets, we attributed the acquisitions to ricocheting small-arms fire exchanged between the Republican Guards units and the rebels fighting on the Iraqi side of the Demarcation Line. Consequently, none of the acquisitions were forwarded through channels; instead, they became another entry in the "false target log."

We were greatly dissatisfied with this method of target validation. The importance of our mission demanded a far more stringent validation process with a greater degree of certainty. It was very frustrating to be unable to identify the reasons for the false target acquisitions and the steps needed to prevent them in the future. We used all the means at our disposal to accomplish the mission, which validates the real root of the problem—an argument Shelly made.

Throughout Shelly's memorandum, he promotes the idea that we need more emphasis on educating Reglegs on the effects of radar false targeting. He uses the experiences of Reglegs in Panama's Just Cause and those TA actions in Lebanon to support his argument. In both these operations, Firefinder (Q-36) radars acquired many false targets. Shelly states that two types of false radar targets exist. One type "...is from electronic returns from objects that appear to be projectiles but are not." The other type, Shelly says, are those generated by the radar itself and may be attributed to faults in the software design.

The F/333 Counterfire/Target Production Section operates from the 3d Armored Division Tactical Operations Center (TOC) during Desert Storm.

In our experiences in Southwest Asia, the second type of false target acquisition happened only a few times, but on at least one occasion, it caused a great deal of confusion. The false acquisition happened in the initial stages of the division's relief-in-sector mission of the 1st Cavalry Division (1st Cav). At that time, operational control of the radars was with the DS battalions. The Q-36 positioned with one of those battalions acquired a target and forwarded it through the tactical fire direction system (TACFIRE) to the battalion intelligence section (S2) for processing. The S2, acting as the target processing agency, forwarded the acquisition to the corps fire support element (FSE), as instructed. Fortunately, the variable format message entry device (VFMED) operator at the Div Arty counterfire cell caught the discrepancy and, after some embarrassment, voided the TA before it developed into a violation of the cease-fire. Shortly thereafter, it was decided that all TAs would be reported to the counterfire cell first, plotted on the target production overlay and, if appropriate, forwarded to higher headquarters.

After this incident, we had many discussions about false targets with the radar technicians and section members. We could arrive at no clear consensus as to what might cause the Q-36 to generate this type of false target. Our best guess was that there's a software glitch that, up until this time, hadn't been detected and, therefore, had gone uncorrected. The disturbing aspect of this problem is that no one in the battery is qualified to say for certain.

Conclusion

Our experiences in Southwest Asia and those of fellow Redlegs that Shelly wrote about in his memorandum indicate that the Field Artillery community sorely needs to revise doctrine and increase emphasis on education to optimize the effectiveness of Firefinders. Immediate action is needed to expose more Reglegs to—not only the capabilities of Firefinder—but also its limitations.

Shelly's recommedation that training on discriminating between false and real targets become a part of courses for military occupational specialties (MOSs) 13R Field Artillery Firefinder Radar Specialist, 13F Fire Support Specialist and the warrant officers' 131A TA Radar Technician and officer specialty 13D Field Artillery TA is well-founded. The sooner we get started, the quicker we'll realize the full potential of this great combat multiplier.

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